



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,369	07/13/2006	Gideon Kutz	SC13080EI	5739

23125 7590 12/12/2008
FREESCALE SEMICONDUCTOR, INC.
LAW DEPARTMENT
7700 WEST PARKER LANE MD:TX32/PL02
AUSTIN, TX 78729

EXAMINER

RIZK, SAMIR WADIE

ART UNIT

PAPER NUMBER

2112

NOTIFICATION DATE

DELIVERY MODE

12/12/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USADOCKETING@FREESCALE.COM

Office Action Summary

Application No.

10/596,369

Applicant(s)

KUTZ ET AL.

Examiner

SAM RIZK

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/9/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/9/2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIS)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 12/2/2008

DETAILED ACTIONS

- Claims 1-21 have been submitted for examination
- Claims 20-21 have been cancelled
- Claims 1-19 have been rejected

Drawings

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The specification is lacking all headings and subtitles and cross references to priority applications. Lists below the MPEP section 606 on the specification content.

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the

specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
 - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems

previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed

in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han US patent no. 7,155642 (Hereinafter Han).and in further view of Shin et al. Processor-Based Turbo Interleaver for Multiple Third-Generation Wireless Standards, IEEE communications Letters, vol. 7, no. 5, May 2003 (Hereinafter Shin) –copy is on the IDS record filed by the Applicant on 6/9/2006.
4. In regard to claim 1, Han teaches:
- (Currently Amended) An interleaver for a turbo encoder and decoder comprising:

- a first table populated with a first set of parameters to allow intra-row permutation of data within an array in accordance with a first wireless communication standard when operation in the first wireless communication standard is required; and
(col. 2, TABLE 1 and lines (9-15) in Han)
- a second table populated with a second set of parameters to allow inter-row permutation of the data in accordance with the first wireless communication standard when operation in the first wireless communication standard is required
(col. 3, lines (40-45) and TABLE 3 in Han)

However, Han does not teach populating the interleaver tables with multiple wireless standards that comprise:

- wherein the first table is populated with a third set of parameters to allow intra-row permutation of data within an array in accordance with a second wireless communication standard when operation in the second wireless communication standard is required and
 - to populate the second table with a fourth set of parameters to allow inter-row permutation of the data in accordance with the second wireless communication standard when operation in the second wireless communication standard is required;
- Shin in an analogous art that teach processor-based turbo interleaver for multiple third generation wireless standards teaches

- wherein the first table is populated with a third set of parameters to allow intra-row permutation of data within an array in accordance with a second wireless communication standard when operation in the second wireless communication standard is required and

(Figure 1 and section II-Standardized turbo interleavers in page 210 in Shin)

- to populate the second table with a fourth set of parameters to allow inter-row permutation of the data in accordance with the second wireless communication standard when operation in the second wireless communication standard is required;

(Figure 1 and page 210, section II-Standardized turbo interleavers in Shin)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Shin that comprise interleaver construction for multiple wireless standards with the teaching of Han.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the need for flexible and programmable decoders for 3G communication because global roaming is recommended between different 3G standards.

- wherein the interleaver further comprises a buffer arranged to compare received interleaved addresses with the size of the data array and to store valid addresses;

(Figure 2, ref. Address Queue in page 211 in Shin)

- wherein the buffer is arranged to control the flow of data into the interleaver, such that when a predetermined number of addresses have been stored in the buffer the buffer stops the flow of data into the interleaver to allow the outputting of addresses from the buffer to be performed at substantially a constant rate.

(Figure 2, ref. (206) in Han)

5. In regard to claim 2, Han teaches:

- (Original) An interleaver according to claim 1, wherein the first wireless communication standard is the family of WCDMA standards within 3GPP.

(Figure 1 and page 210, section II-Standardized turbo interleavers for WCDMA that comprise 3GPP in Shin)

6. In regard to claim 3, Han teaches:

- (Currently Amended) An interleaver according to claim ~ 2, wherein the second wireless communication standard is the family of WCDMA standards within 3GPP2.

(Figure 1 and page 210, section II-Standardized turbo interleavers for WCDMA that comprise 3GPP2 in Shin)

7. In regard to claim 4, Han teaches:

- (Original) An interleaver according to claim 3, wherein the parameters populated in the first table are $(R_j) \bmod (p')$, where j is the row number for the data array, R_j is a row specific prime number for the array and p' corresponds to a selected prime number minus 1 for the 3GPP standard and the total number of columns within the data array for 3GPP2.

(col. 2, equation (1) in Han)

8. In regard to claim 5, Shin teaches:

- (Currently Amended) An interleaver according to claim 1, wherein the parameters populated in the second table are inter-row permutation sequences multiplied by column numbers associated with the data array,

(col. 2, lines (40-65) in Han)

9. In regard to claim 6, Shin teaches:

- (Original) An interleaver according to claim 4, further comprising a multiply and modulo module arranged to receive $(R_j) \bmod (p')$ values from the first table and to generate and output via a first output $[ixR_j] \bmod (p')$ where i corresponds to the columns of the data array.

(Figure 3, ref. (400) & (404) in Han)

10. In regard to claim 7, Shin teaches:

- (Currently Amended) An interleaver according to claim 6, wherein the multiply and modulo module is arranged to generate and output via a second output $[ixR_j] \bmod (p')$ when operating in the family of WCDMA standards within 3GPP2.

(Figure 1 and page 210, section II-Standardized turbo interleavers for WCDMA that comprise 3GPP2 in Shin)

11. In regard to claim 8, Shin teaches:

- (Currently Amended) An interleaver according to claim 1, wherein a rate of received interleaved addresses to the buffer is responsive to a relationship between valid and invalid addresses.

(col. 8, lines (20-50) in Shin)

12. In regard to claim 9, Shin teaches:

- (Currently Amended) An interleaver according to claim 1 wherein a size of the buffer is responsive to a relationship between valid and invalid addresses.

(page 211, figure 2, "address Queue" in Shin)

13. In regard to claim 10, Shin teaches:

- (Currently Amended) An interleaver according to claim 1 wherein the buffer is adapted to avoid introducing irregularity into the timing of the output of the interleaved address.

(page 210, col. 2, lines (1-18) in Shin)

14. In regard to claim 11, Shin teaches:

- (Currently Amended) An interleaver for a turbo encoder and decoder comprising at least one component adapted to provide valid and non-valid interleaved addresses; and
- a buffer arranged to store valid addresses and to output valid addresses at substantially constant rate;
- wherein the buffer is adapted to compare received interleaved addresses with the size of the data array to determine a validity of a received address.

(page 210, col. 2, lines (1-18) in Shin)

15. In regard to claim 12, Han teaches:

- (Currently Amended) An interleaver according to claim 11, wherein the at least one component comprises a row counter.

(Figure 2, ref. (204) in Han)

16. In regard to claim 13, Shin teaches:

- (Currently Amended) An interleaver according to claim 11, wherein the buffer is arranged to control the flow of data into the interleaver, such that when a predetermined number of addresses have been stored in the buffer the buffer stops the flow of data into the interleaver.

(page 211, figure 2, "address Queue" in Shin)

17. In regard to claim 14, Shin teaches:

- (Currently Amended) An interleaver according to any claim 11, wherein a rate of received interleaved addresses to the buffer is responsive to a relationship between valid and invalid addresses.

(page 210, col. 2, lines (1-18) in Shin)

18. In regard to claim 15, Shin teaches:

(Currently Amended) A turbo decoder comprising an interleaver according to claim 11, and a processor arranged to populate the first table and second table with the first set of parameters and the second set of parameters respectively when operation in the first wireless communication standard is required (col. 2, TABLE 1 & 3 and lines (9-15) in Han) and to populate the first table and the second table with the third set of parameters and the fourth set of parameters respectively when operation in the second communication standard is required.

(Figure 1 and page 210, section II-Standardized turbo interleavers in Shin and adapting TABLE(S) 1 &3 in Ham for the second wireless standard)

19. In regard to claim 16, shin teaches:

(Currently Amended) A turbo encoder comprising an interteaver according to claim 9, and a processor arranged to populate the first table and second table with the first set of parameters and the second set of parameters respectively when operation in the first wireless communication standard is required (col. 9, TABLE 1 in Shin) and to populate the first table and the second table with the third set of parameters and the fourth set of parameters respectively when operation in the second communication standard is required.

(page 210, abstract in Shin)

20. Claim 17 is rejected for the same reasons as per claim 1.
21. Claim 18 is rejected for the same reasons as per claim 8.
22. Claim 19 is rejected for the same reasons as per claim 9.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- Kukla et al. US patent no. 7,269,149 teaches interleaver for mobile communications.
 - Shin US patent no. 7343530 teaches turbo interleaver for multiple wireless standards.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

/Sam Rizk/

Examiner, Art Unit 2112